DOES THE EXPANSION OF HIGHER EDUCATION INCREASES EQUALITY OF EDUCATIONAL OPPORTUNITIES? EVIDENCE FROM ITALY [(0)]

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Abstract

This paper studies the effect of the expansion of higher education (HE) supply on increasing the equality of tertiary education opportunities. It focuses on Italy's experience during the Nineties, when some policy changes prompted HE institutions to offer a wider range of degrees and open new sites in neighbouring provinces. The results suggest that the supply expansion has only limited effects on reducing existing inequality in access to HE, since the greater availability of courses has positive impact only on the probability of university enrolment but not on holding a university degree.

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1. Introduction

This paper studies the impact of the expansion in the supply of higher education (HE hereafter) on equality of opportunities in individual educational careers at tertiary level. Despite the existence of alternative definitions of equality of opportunity (Roemer 1998), we will content ourselves with the notion of increasing equality of opportunities associated to a reduction of the influence of events that are out of individual control (e.g. what Roemer defines as *circumstances*). Educational choices are typically correlated with parental features, including among others genes, education, cultural resources, current income, residential choices and inherited wealth (Carneiro and Heckman 2003). Thus any policy capable of reducing the impact of one (or more) of these variables onto individual educational choices can be considered as inequality (of opportunities) reducing. Well-known examples are compulsory education laws. Since each child is required to attend school independently of his/her family of origin, this obligation reduces (in the limiting case of full compliance makes it vanish) the differential in the probabilities of completing a given level of education among students from different family backgrounds. The other side of the coin is that an increase in the equality of opportunities translates in an increase of intergenerational mobility in education, when parental education is the crucial variable characterising family background (Machin and Blanden 2004).

In the present paper we focus on a specific segment of the educational career, represented by accessing tertiary education. While in most developed countries secondary education is almost universally achieved, tertiary education still represents a discriminant between students from different social classes (Shavit et al. 2007). Most countries have accommodated the increasing demand for HE by introducing non-university tertiary education (technical schools, polytechnics, fachhochschulen), while others (including Italy) have retained a university-based organisation of tertiary education. This implies that existing institutions have faced a mounting pressure to accommodate a student population that in the Italian case has decupled over the last three decades. The new entrants were the offspring of less privileged families, thus increasing the equality of opportunities almost by definition. However, what matters is the odds ratio between two otherwise identical individuals, born in different families. In this respect it is crucial to analyse how the enlargement of university

access has been accomplished. One could increase the number of seats available, introducing in the meanwhile a screening of students based on their academic abilities. Conversely, one could open tertiary education to the private sector, allowing for the creation of an implicit ranking of existing institutions and leaving the market for HE to achieve some equilibrium configuration (Fernandez and Gali 1999).

The Italian case is an interesting one under several respects. The Italian policymakers did not rely on the stratification of the tertiary education supply (between university and non-university, or between public and private), but followed the principle of autonomy, encouraging local solutions, while still retaining a regime of central approval. In terms of equality of opportunities this choice may have ambiguous effects. On one side, the generalised expansion of enrolment may raise equality. On the other side, locally devised solutions may exacerbate poverty traps (either in economic or cultural terms), thus reducing equality. Things are even more complicated when we take into account that during the nineties a number of key changes in the university regulation took place in Italy. As a result, Italian universities started to expand their supply, both by opening new sites in neighbouring cities and offering a higher variety of degrees. Thus students and their families were confronted with a changing and expanding supply, which is likely to bring in at least two effects: a cost-reduction effect, due to the possibility to enrol university without moving to different city; and a potential increase in labour market returns, given the increased possibility to select courses better tailored for enterprises' needs. Then we are not surprised to observe that the increased supply of HE went hand in hand with an expanding demand. However, what we are more interested in understanding is who are the students more benefited by this expansion. In facts, the expansion of HE supply is the source of variability we exploit to understand the relation between the availability of university courses and infrastructures at the local level and the likelihood of attending and/or possibly completing university courses.

The macro evidence is unable to provide a reliable answer to this question. While university statistics show a sharp increase in student and graduate numbers during the 90s in Italy, it is not clear whether this rise has been determined primarily by changes in the characteristics of the population (e.g., the number of individuals with highly educated parents) and/or in the macro-economic environment (e.g., an increase in the returns to education due to skill-biased technical change) or whether

the increase in HE supply that took place in the same period had instead an independent effect on the demand for education. On the conbtrary, using evidence from micro-data, we show that the expansion of university courses has effectively increased the likelihood of university enrolment for students from middle class and/or less educated parents. However, the expansion in enrolment does not translate in increased probability of holding a college degree. Thus we observe a reduction of the inequality of opportunities that is only apparent, since the odds of graduating when coming from different social backgrounds seems not affected by increased availability of university courses. The structure of the paper is as follows. Section 2 briefly describes the policy changes introduced in the 90s. Section 3 illustrates our empirical strategy and the main results. Section 4 concludes.

2. 1990-2000: a decade of expansion in Italian higher education

At the end of the eighties, the public system of HE in Italy was in a dismal state (see ISTAT, 1995). The graduation rate was one of the lowest among the OECD countries, as only 30% of the students enrolled were actually capable to attain a degree. The actual time-span required to complete a degree was on average twice as that envisaged. The university poles of the largest metropolitan areas were overcrowded.

There was a widespread view that the failure of the public system of HE should have been tackled. In contrast with the substantial immobility that had until then featured the Italian university system, the Nineties experienced a flourishing of policy interventions, which are detailed in the Appendix. For the aim of the paper what is worth to note is that these reforms resulted in a *spectacular increase in HE offer*. First, a law forced the largest universities (Milan, Rome and Naples, which at that time had more than 40,000 students) to split up, and that triggered the birth of a number of smaller sites. Second, new public funding was granted to expand higher education infrastructures, especially in southern regions, less endowed with university premises. Third, and crucially, the Italian Parliament approved a series of laws that allowed Italian universities with a substantial, previously inexperienced, autonomy. Given a soft budget constraint, the autonomy spurred the universities' incentives to

expand their HE supply.[1]

The universities pursued different strategies of supply expansion. Apart from those who were forced by law to split, some universities just opened subsidiaries (for instance, Bologna in Forlì and Rimini, Siena in Arezzo), some others preferred to open multi-centre universities (e.g., Piemonte Orientale, Insubria, Modena and Reggio Emilia).[2] Moreover, some universities replicated their existing supply across the national territory (for example, the Catholic University opened short course in nursing in 10 different locations), while some others diversified in different fields (for instance, the universities of Salerno, Cassino and Benevento opened four new faculties each).[3]

As a result, the variety of degrees boomed while the geographic concentration of HE infrastructures decreased substantially. On the one hand, the total number of four– and five–year degrees (*Corsi di Laurea*) offered rose from 898 to 1,321.[4] On the other hand, universities – that historically were concentrated in the largest cities – expanded their supply to small cities. From 1990 to 2000, the number of

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[1] As underscored by Besley and Case (2000), one should be careful in drawing inference from policy variations, which could be responsive to economic conditions (*endogenous policies*). In this regard, it should be noted that, the increase in HE supply was hardly driven by an economic rationale: the new infrastructures did not followed the potential unfilled demand for HE, while cost-benefits analyses were never performed. Rather, the increase followed an indiscriminate allocation of public funds across Italian regions. See, for instance, the following assessment from *Ministero dell'Università e della Ricerca Scientifica e Tecnologica - Osservatorio per la valutazione del sistema universitario* (*Verifica dei piani di sviluppo dell'università 1986-90 e 1991-93, doc. 4/97, August 1997, p.10*): "With respect to the development and rebalancing of university educational supply, which had to be carried out on regional basis, there have been a large number of actions: 4 new universities were founded, 2 private universities became state universities, 17 new sites were created, 41 new faculties and no less than 230 new degrees (which added to the 890 existing in 1986). Nevertheless, (...) these actions were not planned taking into account the educational demand expressed by each region, nor evaluating the potential flow of students (i.e. evaluating the potential demand for each action), or the employment perspectives (i.e. the competences and skills required by the country) or the potential of existing facilities. Ultimately, these actions lacked accurate assessments, both regarding the comprehensive scope and the compatibility with the pre-existing situation. In fact, the main purpose of the programs seemed to be a geographical rebalancing of the universities premises, with the aim to bring the educational supply closer to the demand, while issues like the real extent of the demand (which sometimes was so modest that it didn't permit an efficient and effective endeavor), or infrastructures, accommodation capacities and financial support available to students, were disregarded. Once again prevailed – at least for the most part - an unselective "all over the place" approach, inspired by a barely incremental purpose…" (*our translation*).

[2] In most cases local councils significantly sponsored the project of opening university branches in their cities, because it was held prestigious (and appreciated by the families, due to cost reduction) to have HE courses taught locally.

[3] Opening a new school from scratch was quite difficult. In the vast majority of cases, it was a group of professors working in the same (or related) fields, who asked for the creation of a new school therein or somewhere else. For instance, the school of Economics of the University of Siena, which has since long traditionally offered three types of degree – economics, statistics and banking – increased its supply to eight curricula. At the end of the 90's the school was able to offer 6 more degrees: economics of financial markets, environmental economics, public economics, business administration, economics of small and medium enterprises (in a different location, Arezzo) and economics and sustainable development (in another location, Grosseto).

[4] Shorter term (two– and three–year) degrees (*Corsi di Diploma Universitario*) were also introduced: in 2000 there were 956 of them. The vast majority of students, however, continued to enrol in *Corsi di Laurea.*

municipalities with a university location rose from 104 to 196. The data reported in table 1 show that this expansion mostly took place in a period comprised between 1990 and 2000. The territorial distribution of this expansion is depicted in figure 1.

These two measures, courses and sites, are used to proxy for the expansion of the HE supply in the empirical section below. Our main indicator, *New courses*, is the average yearly increase in the number of courses (divided by the local population aged 19 in 1991) at the regional level. This variable reflects both the opening of new courses, possibly in different fields, in sites already served by university sites and courses in sites not previously endowed with HE infrastructures. Therefore, the impact of this variable can reflect both *variety* benefits, due to the availability of courses with up-to-date contents and curricula better tailored to local labour market needs, and *proximity* benefits, which materialise if the local availability of infrastructures reduces enrolment costs. In an attempt to disentangle between these two potential sources of benefits, we also make use of another indicator, *New sites*, which is the average yearly increase in the number of university locations (divided by the population aged 19 in 1991) at the regional level. While some overlap remains (for instance, the content of the courses created in new sites was sometimes different from that of the courses supplied in the established sites - see footnote 7), this second indicator should reflect more accurately the role of the increased dispersion of HE infrastructures over the region.

3. Empirical strategy and results

We aim at exploiting the increase in supply of HE promoted by the reforms of the 90s to evaluate its effects on the equality of tertiary education opportunities.

We use some cross sections of individuals for whom we have information from the Bank of Italy *Survey of Household Income and Wealth* (SHIW, hereafter), and we link individual educational attainment with region-level data on the intensity of the increase in regional HE supply between 1990 and 2000. The "exposure" of an individual to the "treatment" (i.e. HE supply expansion) and its intensity are determined by the period in which he attended/did not attend university (his cohort of

birth) and by his region of residence, respectively.[5] Although exposure to the treatment is completely exogenous (since it only depends on an individual's birth cohort), the intensity of the treatment is potentially endogenous, and, for this reason, we will investigate the extent to which our results change by considering potential omitted variables that might be simultaneously correlated both with the demand and the supply of tertiary education. Basically, we will be calculating the probability for an individual *with a given family background* to achieve a certain HE attainment and assessing whether this probability (which depends on family background) has changed because of the HE supply expansion

One important limitation of the SHIW data is that we observe only individual regions of birth and the current regions of residence, while we do not observe the region of residence just before enrolling in HE, or at age 19, when decisions about enrolling university are typically taken. For this reason we are forced to assume that the current region of residence was also the region of residence at age 19, or when an individual took the decision whether to enrol or not university. If individuals would move randomly across regions, then our analysis would likely underestimate the true effect of HE supply expansion on educational achievement. Our assumption is potentially more problematic in the case of *endogenous migrations*. Indeed, some individuals might have moved to regions where HE supply expansion was bigger because they wanted to enrol in HE more easily; alternatively, highly educated individuals may want to move to the same regions because the local labour market was more dynamic. In both cases, a positive correlation between HE supply expansion and tertiary educational achievement measured at regional level would only be a spurious one. Here, we take advantage of the very low inter-regional mobility of Italian university students: more than 80% of them enrol in a university located in the same region where they reside, and this share has been roughly constant over the decade (see MIUR, 2003). Moreover, the vast majority of Italian graduates live and work in the same province where they studied.[6] However, we will also investigate the

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[5] Given the low number of individuals living in the region Valle d'Aosta, these individuals are assigned the values of Piemonte both for the supply expansion and the regional controls.

[6] Rostan (2006) reports this figure to be 86% (p. 207). Therefore, the fraction is also higher when measured at regional level. We used the SHIW 2002 which provides data on the HE institutions in which individuals studied and found that among the graduates aged 23-31 84% were resident in the region in which they studied, 79% studied in the region in which they were born and for ¾ of the sample (78%) regions of study, residence and birth coincide. These figures are slightly lower for Southern Italy (76%, 80% and 75%, respectively).

potential implications of endogenous migrations for our estimates in Section 3.2.[7]

We will consider two different indicators of educational achievement. The first one is the *likelihood of obtaining a university undergraduate degree* while the second is the *likelihood of obtaining an undergraduate degree or of being a full-time undergraduate student*.[8] The first measure, the probability of holding a degree takes into account not only enrolment but also the effectiveness of the educational process, that is whether (and the time at which) a degree is obtained. For instance, an increase in student enrolments due to HE supply expansion would be considered as a positive outcome only if these students graduate before reaching age 31, which represents the upper age-limit for the sample we consider below (see Sect. 3.1).[9] A well-known problem with Italian HE students is that the number of those who have not completed their exams (named *fuori corso*), as well as those who complete HE with a time lag with respect to the *envisaged* completion time, is huge. To the extent that supply expansion lowers the *actual* completion time, this improvement will be reflected in this outcome variable.[10] However, if the HE supply expansion raises the enrolment probability of less-motivated or less able students ("marginal students"), which typically have longer graduation times, these outcome would not be captured by the first measure considered. This is the reason why we consider the second educational outcome variable. It must be noted that from the SHIW data it is possible to identify only the students who declared studying as their main activity (i.e. full-time students). Therefore, this solution does not fully capture working students and especially mature

[7] It is perhaps important to note that there is another potential problem with the baseline experiment described in the following section, namely a potential time overlap of "untreated individuals" with the time-span of the reform. Indeed, nothing prevents that the sample taken from the 1993 wave includes individuals that might have partly benefited from the reform. As for the likelihood of holding a degree, we know that individuals selected in 1993 who have a college degree must have enrolled before 1990. However, some students could have moved to the new courses created after 1990, as this possibility was allowed by the law. The problem can be more severe when we consider our second outcome variable, the likelihood of obtaining a degree or of being a university student. Indeed, this variable can reflect after-1990 enrolments. In a previous version of the paper, where we also estimate the effect of HE supply expansion without distinguishing by social class we considered the 1991, which is less subject to the overlap problem, and the 2002 cohorts, obtaining very similar results to the regressions using the 1993 and 2002 cohorts, which suggests that partial overlapping is less of a problem.

[8] In what follows, we will sometimes use the expression "probability of being a student" meaning the "probability of being a full-time undergraduate student".

[9] An improvement in this indicator might be produced by an increase in enrolments at invariant drop-out rates, by a reduction in drop-out rates at invariant enrollment or by both an increase in enrollment and a reduction in drop-out. Our data do not report drop-out information and therefore we cannot distinguish among these potential effects.

[10] This could be an intended result of the reform. For instance, among the new courses created some of them (university diplomas) require less time to be completed.

students (who are less likely to self-define "students"). This means that in the analysis that follows we will not be able to fully evaluate the effect of HE supply expansion on mature students, since they are likely to be full-time or part-time workers and to graduate at ages older than 31. However, since both pecuniary and non-pecuniary returns of a university degree (increases in wages and productivity, health improvements) are larger for younger individuals, who have a longer residual lifetime horizon, we think that both the measures considered here are worth analysing.[11]

Unfortunately, as it often happens in empirical research, we do not have the "ideal" dataset to achieve our goal. In particular, to make sure we are identifying the effect of supply expansion, we want to compare individuals exposed to the increase of HE supply with fully unexposed ones. At the same time, we also want to control for the other possible determinants of tertiary education. Our data do not enable us to reach both objectives at once. For this reason in what follows we will consider various outcome variables and "experimental" designs. Although each of them has pros and cons, overall they provide a sufficiently general view of the effectiveness of expansion of HE supply.

3.1 The baseline specification

The SHIW does not generally provide individuals' graduation date. To contrast exposed individuals with unexposed ones, we have to select the relevant cohort carefully from the correct wave. We start by considering a baseline case. In this "natural experiment",[12] we use the 1993 and the 2002 waves of the SHIW and consider

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[11] In the academic year 2001-2002 the Italian system of HE was changed again with the introduction of the so called "3+2" system, which envisaged 3-year first level degrees followed by 2-year second level degrees (largely known as the *Bologna process*). In this paper we only consider the effect of university supply expansion during the 90s, which is before the implementation of the *Bologna process* reform. For a study focusing on the "3+2" reform see Bondonio (2006). Since we are considering the 2002 wave of SHIW, the second measure of educational attainment, which also considers full-time students, may be potentially affected by the "3+2" reform: some students might have decided to enrol HE in 2001, after the introduction of the reform. We expect that this is not going to affect our analysis since we are considering individuals older than 23 who self-declared to be full-time students. Most students who decided to go back to university after the "3+2" reform were likely working full-time or part-time, while we expect only a minority of them to have enrolled full-time university and withdrawn from the labour market. However, we also run a robustness check of all regressions reported in this paper by excluding from the analysis university students who had working experiences in the past and were studying full-time (39 individuals in our estimation sample) and the results did not change.

[12] We call it a "natural experiment" since treatment status is determined only by birth cohort and is not a choice variable for an individual, i.e. individuals cannot self-select into the treatment. However, as we will explain in Section 3.2 individuals might self-select into the intensity of treatment (supply expansion) by *endogenous mobility*.

individuals aged 23-31 in both waves. All individuals who were 23-31 in 1993 and held a degree must have enrolled HE before the expansion of supply (the "treatment") that started in 1990, therefore they can be considered as untreated. We select individuals in the same age group from the 2002 wave. Since the regular age at entry into HE in Italy is 19 (20 for one third who repeated at least one year), all individuals who held a degree in 2002 and were aged 23-31 in the same year must have enrolled university in 1990 or later, i.e. during the years of supply expansion.[13]

To assess the effect of the expansion of university supply on individual educational outcomes we use an empirical specification similar to the one proposed by Duflo (2001), who uses a Difference-in-Differences strategy to estimate the causal effect on schooling of the expansion in the number of primary schools triggered by a reform introduced in Indonesia. However, we do not only compare the educational outcomes of individuals with similar characteristics before and after the 90s reform (comparing two cross sections), but we also consider the effect of different intensities of treatment (HE supply expansion). While birth cohort determines the treatment status, the intensity of treatment is determined by the size of supply expansion measured at regional level. By including region fixed effects we will implicitly control for time-invariant regional factors, which might affect both demand and supply of tertiary education, and reduce the risk of endogeneity of HE supply with the demand for HE.

However, the variation in treatment intensity across regions and cohorts can be meaningfully linked to individual human capital attainments only if we are able to differentiate out individual and regional characteristics that may be correlated with the supply expansion and also affect the decision to enrol in HE. Previous work suggests that family background is generally a powerful predictor of an individual's educational outcome in the Italian context (Checchi et al., 2007). Controlling for parental background may thus be central in order to correctly identify the causal effect of the increase in university supply, since one may expect that the accumulation of human capital has grown simply because of the increase in the number of parents who have a university education, and who, for this reason, place a particular value on their children's education (or are better able to afford HE).[14] A central feature of the

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[13] In particular, individuals who were 31 in 2002 were 19 in 1990, while those who were 23 in 2002 were 19 in 1998.

[14] In the regressions we do not control for the fact of possessing a high school diploma or do not restrict the sample to individuals with a high school diploma. Possessing a high school diploma can be

SHIW 1993 and 2002, which are used in the baseline specification, is that they report information on parental education and job qualification.[15] We will also include in the empirical specification other individual characteristics such as gender and age, birth cohort and region of residence.

The validity of our estimates relies on the identifying assumption that there are no omitted time-varying region-specific effects correlated with both HE supply expansion and individual educational achievement (see Borland *et al.*, 2005, p. 17). This assumption should not be taken for granted, as the expansion in university supply during the 90s might be correlated with other regional changes that took place in the same decade, and which might have affected the demand for education. For instance, an increase of unemployment rates at regional level may produce an increase in the demand for HE (due to lower opportunity costs of acquiring human capital) and be positively correlated with HE supply expansion in case of government compensatory policies. Similarly, an increase in real disposable income per capita may increase the demand for HE, if HE is a consumption good or by relaxing liquidity constraints for credit constrained individuals, and be positively correlated with the HE supply expansion, since setting up new courses and opening new branches generally require external funding.[16] Moreover, HE institutions might expand their supply in response to the observed or expected rise in potential demand. During the 90s Italian regions might have been characterized by differential rates of expansion of secondary education and demographic trends. If the supply expansion simply mimics the rise in the number of individuals completing high school, i.e. if universities open new

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considered as an endogenous outcome and we prefer to exclude it. Moreover, in the regressions we already control for household background which, as we already said, is a strong predictor of an individual's education in Italy and we also consider the effect of including in the regressions the increase in the number of high school graduates at regional level, which may be potentially correlated with the expansion of HE supply (see column (4) of Tables 2 and 3).

[15] In the SHIW family background controls have to be collected from two separate sources. For individuals who are living with their own parents, family background variables can be taken from the main-questionnaire section as it routinely collects educational achievements and job qualifications for all family members. For individuals living in a household different from that of their parents (or for those whose parents are not cohabiting, because of divorce/migration/death), family background variables have to be obtained from the intergenerational-information section (which refers to when parents had the same age as the individuals), which was included starting from the 1993 wave. As shown by Francesconi and Nicoletti (2006), it is important to keep both co-residents and non co-residents in the estimation sample, since co-residence may not be at random with our outcome of interest.

[16] However, it must be noted that we will control in the regressions for individual level variables that may be proxy of liquidity constraints or income effects (namely parents' social classes and educational levels).

branches or set up new courses in regions in which the demand for education is rising or expected to rise, then the estimated effect could hardly be considered as supply driven.

For these reasons, we will re-estimate the baseline specification also controlling for the absolute variation in unemployment rates (source: *Prometeia*), the growth rate in per capita disposable income at 1995 prices (source: *Prometeia*), and the change in the number of high school diplomats (source: National Statistical Institute, *ISTAT*). All variations or growth rates are measured between 1990 and 2000 at the regional level and are included as interactions with a post-reform dummy (which takes unitary value for the post-reform cohort and zero otherwise). Although these additional regressions do not provide definitive evidence on the validity of our estimator, they can nonetheless show the sensitivity of our estimates to the omission of variables that may affect both the regional intensity of the treatment (expansion of HE) and individual educational outcomes.

Following Duflo (2001), we specify the educational attainment function using a linear probability model (LPM).[17] Let us define as S_{ijk} a dichotomous variable representing the educational outcome of interest (e.g. possessing a degree) for individual i living in region j and belonging to cohort k, that is assumed to be a linear function of some observable and unobservable variables and takes on value one in case a certain educational outcome has been achieved:

$$S_{ijk} = \alpha_j + \gamma_k + \delta X_i + \beta_b \cdot (POSTREF_k \cdot \Delta SUPPLY_j \cdot B_i) + \varphi(R_j \cdot POSTREF_k) + \varepsilon_{ijk} \qquad (1)$$

where α_j are region of residence fixed effects, γ_k are birth cohort fixed effects, X_i is a vector of individual variables including gender, age and parental education and occupation, $POSTREF_k$ is a dummy which takes on value zero for the pre-reform cohort, and one for the post-reform cohort (that is the treatment status indicator), $\Delta SUPPLY_j$ is the expansion in university supply over the period 1990-2000, B_i is a vector of indicators of family background (in terms of parental education or social

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[17] While the LPM delivers unbiased and consistent estimates when one omits from the regression variables uncorrelated with the included covariates, non-linear models such as probit or logit models do not have this property (see for instance Cramer 2005).

class), R_j is a vector of regional control variables for the period 1990-2000 and ε_{ijk} is a zero-mean stochastic error term allowed to be correlated within region and time (standard errors are clustered by region and birth cohort) capturing individual unobservable attributes. HE supply expansion enters equation (1) interacted with birth cohort dummies since only the post 90s cohort was exposed to it, and interacted with family background since we are interested in the differential effect of HE regional supply by family background. In short, we are interested in the vector β of coefficients on the interaction terms between cohort, supply expansion and family background (whose elements are indicated with β_b). When comparing the educational achievement of the two different birth cohorts (pre- vs. post-90s), if additional HE supply led to an increase in educational attainment, the difference in educational outcomes should be positively related to the number of courses or sites created in each region. The effect of HE supply expansion for an individual with family background $b = B_i$ is therefore:

$$\frac{\partial S_{ijk}}{\partial(\Delta SUPPLY_j \cdot B_i)} = \beta_b \cdot POSTREF_i \tag{2}$$

In Table 2 we report the estimates of the effect of increasing the number of courses (section a) and increasing the number of university sites (section b) on the likelihood of holding a degree (before turning 32 years old, given our sample selection criteria). Because of the relatively small sample size we considered the following measures of family background when interacting the effect of HE supply expansion. As to social class, three broadly defined social classes were defined: *Working class* or *out of the labour force* including blue collars, unemployed or inactive; Petite bourgeoisie including low-rank white collars, teachers and self-employed worker; Bourgeoisie including high-rank white collars, managers, professionals and entrepreneurs. Additionally, we defined three levels of cultural capital: Low when both parents have less than a high school diploma; Medium when at least one parent has a high school diploma; High when at least one parent has a university degree. Each estimated regression included either the interaction of HE supply with social class or the interaction with cultural capital. The importance of controlling for the heterogeneity of the effect of HE supply according to these two dimensions is justified by the fact that

the first proxy of family background should mainly capture the effect of family "economic capital" (in absence of family income), while the second should proxy "cultural resources". In general, in Italy parents' education appears to be a much stronger predictor of children's education than parents' income (see, for instance, Checchi 2003).

Section a) of Table 2 reports the effect of the creation of new courses on the likelihood of having a degree. The model in the first column does not include regional control variables. The effect of HE supply turns out to be positive and statistically significant (at 5%) only for the petite bourgeoisie. The coefficient estimate is robust to the inclusion of some but not all the regional controls. In particular, inclusion of the change in regional average real per-capita disposable income reduces the size of the coefficient which becomes statistically insignificant, probably due to the high sample correlation between HE supply expansion and variation of per-capita income at regional level (80%). As already said, all specifications also include birth-cohort dummies, age, region of residence dummies and gender as controls. Our regressions, therefore, do offer only partial evidence on the role of HE supply expansion, which if any, had only an effect on medium class individuals. For the latter, the effect of the creation of new courses suggests that the likelihood of having a degree increased by about 22-40.1 percent points for each new course per 1,000 individuals aged 19 created at regional level each year. Multiplied by the average increase in the number of courses in the 90s, which was 0.13, we obtain an effect in the range of 2.9-5.2 percent points.

We have similar results when considering the effect of HE supply with respect to household cultural capital. In this case, it appears that supply expansion benefited only individuals with low cultural capital. Also in this case the inclusion of average per-capita disposable income strongly reduces the statistical significance of the estimated effect, which ranges between 2.4 ($0.361 \times 0.13 \times 100$) and 4.7 percent points ($0.185 \times 0.13 \times 100$).

Section b) of Table 2 shows the effect of creating new university sites on the likelihood of holding a university degree. In none of the specifications, either considering social class or cultural capital, this second measure of supply expansion turned out to be significantly correlated with tertiary education attainment.

Table 3 reports the estimates of the effect of HE supply expansion on the likelihood

of being a full-time university student or holding a university degree. Section a) shows the effect of increasing the number of courses, which seemed to affect only the attainment of individuals from the petite bourgeoisie. In this case, the estimated effect is robust to inclusion of all regional control variables and ranges between 8.6 (0.663×0.13×100) and 6.5 (0.5×0.13×100) percent points. Section b) shows that the effect of creation of new courses impacted positively on the attainment of individuals irrespective of their levels of household cultural capital, although the effect seems to be monotonically increasing with cultural capital.[18] The effect on the high cultural capital group is less precisely estimated probably due to small cell size. The estimates are fairly robust to inclusion of regional control variables. In the most complete specification, reported in column (5), the estimated effects of HE supply increase are 4.1 (0.312×0.13×100), 4.9 (0.379×0.13×100) and 9.2 (0.711×0.13×100) percent points for individuals with low, medium and high levels of cultural capital, respectively.[19]

The results in Table 2 and Table 3 overall suggests that the expansion of university supply might have had a beneficial effect especially on enrolment rates rather than on graduation rates when considering the age group 23-31 in the period under study. Indeed, the rise in enrolments among young students might have not immediately translated into an increase of the number of young graduates due to the increase in dropout or in time span to graduation. Put it another way, the HE supply might have especially benefited "marginal" students (e.g., the poorest ones in terms of economic or cultural resources, who possessed less time or cultural resources to devote to education since they needed to work, or for the very same reasons they may have been less motivated to), who are also relatively more likely to graduate late (*fuori corso*) or to drop out from HE.[20] Columns 2-5 in Table 3 show that the inclusion of time-varying regional additional controls has little impact on our estimates, which are generally very similar in magnitude and significance levels. This latter piece of evidence

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[18] This evidence is consistent with Blanden and Machin (2004) who show that in the UK over a period of rapid HE expansion, the increase in educational attainment has not been equally distributed across people from richer and poorer backgrounds but it has disproportionately benefited children from relatively wealthy families.

[19] Equality of all three coefficients and equality of coefficients two by two could be rejected by F-tests.

[20] Unfortunately, we are not able to investigate these two hypotheses due to the relatively low number of individuals in our sample (that does not enable us to interact supply expansion with the birth cohort dummies), and to the fact that dropout is not reported in the SHIW, respectively. However, Checchi et al. (2007) using ISFOL-PLUS data, show a constant rise in HE enrolment probability among individuals with low educated parents from the post-1960 birth cohorts to which does not correspond a decrease in drop-out rates, which remained constant.

suggests that our estimates are reasonably robust to the omission of variables potentially correlated both with supply and demand for HE.

3.2 *Robustness checks*

As we have anticipated, our analysis is subject to a main weakness. Our data do not record the region of residence at age 19, when the decision to enrol in HE is typically taken and this introduces a potential problem of *endogenous mobility.* Indeed, we are currently making the assumption that the current region of residence is also the region where individuals resided at age 19. However, this is not necessarily the case. Individuals may have changed residence between age 19 and the age in which they are observed in our analysis. Even worse, some individuals may have moved to regions in which the HE supply expansion was higher, since they wanted to enrol in HE, or because these regions were those with more employment opportunities or with a better marriage market (see Currie and Moretti, 2003). While in the former case we would have an attenuation bias (due to classical measurement error), in the latter case we would be likely to over-estimate the effect of HE supply due to positive self-selection. In this section, we try to address this problem by replicating the baseline specification on the sample of individuals for whom the current region of residence coincides with the region of birth. Although some individuals might have studied in a region different from that where they were born, and then went back to their region of birth after completing their studies, we claim that for this sample the likelihood that the region where they resided at age 19 also coincides with the current residence (i.e. they are *stayers*) is high, given the already mentioned low geographical mobility in Italy. We limit the robustness checks in this section to the regressions using the creation of new courses as a measure of HE supply expansion and analysing the likelihood of being a full-time university student or holding a degree, which gave the most robust results.

Column (1) of Table 4 reports the results of this first robustness check for the specification including all regional control variables. The results are consistent with that of column (5) in Table 3, indeed HE supply expansion turns out to be effective only for individuals from the petite bourgeoisie or endowed with low or medium levels of cultural capital. The magnitude of the coefficients is a bit lower when focusing only on *stayers*, suggesting that endogenous mobility might have led to a slightly

overestimation of the effect of supply expansion in Table 3.

In order to further investigate the issue of endogenous mobility we run another robustness check. We consider also individuals aged 35-43 in both waves (1993 and 2002) and interact supply expansion with the two age groups, 23-31 and 35-43, respectively. Individuals aged 35 in 2002 were 23 in 1990, while those aged 43 in 2002 were 31 in 1990, hence HE supply expansion should have not had a positive effect on their educational attainment, since they were more likely to have entered HE or labour market work already. A strong positive correlation between HE supply expansion and their tertiary educational achievement would instead cast serious doubts on our identifying assumption, which uses current residence as a proxy of residence at age 19, when enrolment decisions are typically made. Column (2) of Table 4 shows that this is not the case. Indeed, the results for the younger cohort are qualitatively similar to those reported in Table 3, while the interaction terms between the increase in supply and the older age group turn out to be either insignificant or significant and negative.[21] A possible explanation for the latter result is that HE supply expansion might have followed compensatory logics and been more intense in the regions with a lower educational attainment at the beginning of the 90s.

4. Concluding remarks

The changes in higher/education regulation ,introduced in Italy during the 90s, prompted a spectacular increase in supply, which included both a wider range of degrees and new locations.

We use data from the Bank of Italy *Survey of Household Income and Wealth* (SHIW) to investigate the effect of the expansion of HE supply at regional level on two distinct educational outcomes: 1) the likelihood of holding a university degree; 2) the likelihood of holding a degree or of being a university student.

We do not find strong evidence of an effect of HE supply expansion on the likelihood of graduation. Indeed, the estimated effect is positive and significant only for the petite bourgeoisie (the middle class) and individuals from low educated parents. Moreover, both these effects are not robust to inclusion of change in average

personal disposable income per-capita at regional level in the empirical specification.

By contrast, we find robust evidence of a positive effect of HE supply expansion on student's enrolment and retention. When considering an individual social class, our analysis suggests that individuals from the petite bourgeoisie were those who mostly benefited from the expansion of the Italian HE system. When considering cultural capital, our estimates suggest that supply expansion benefited all individuals irrespective of parents' levels of cultural capital, although there is evidence of a monotonically increasing effect with cultural capital.

The contrast between finding an effect of HE supply expansion on increasing access to HE but not on successful completion of HE might be explained by the fact that supply expansion is likely to induce enrolment of "marginal" students, those with lower returns to HE or credit constrained ones, who are probably the most likely to drop-out from HE and to graduate late.

These results suggests overall that the fast expansion of HE supply in the 90s had only a limited effect on increasing equality of opportunities in access to tertiary education and partly explains why tertiary educational attainment in Italy is still strongly related to parents' education (Checchi, Fiorio, Leonardi 2007).

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[21] A similar findings is reported in Currie and Moretti (2003, p. 1515).

References

Besley, T. and Case, A. (2000), "Unnatural Experiments? Estimating the incidence of endogenous policies," *Economic Journal*, 110: F672-F694.

Bondonio, D. (2006), "La valutazione dell'impatto netto della riforma", in M. Bini, D. Bondonio e C. Crocetta (eds.) Gli effetti della nuova riforma dei cicli e degli ordinamenti didattici, Research Report to the Ministry of University and Research, *Comitato Nazionale per la valutazione del sistema universitario*.

Borland, J., Yi-Ping, T. and Wilkins, R. (2005), "Experimental and Quasi-Experimental Methods of Microeconomic Program and Policy Evaluation", Melbourne Institute Working Paper Series, Working Paper No. 8/05, The University of Melbourne.

Carneiro, P. and J.Heckman (2003). Human capital policy. NBER wp 9495

Checchi, D. (2003), "The Italian Educational System: Family Background and Social Stratification", in ISAE. 2003, *Annual Report on Monitoring Italy*. Rome: 131-176.

Checchi, D., Fiorio, C. V. and Leonardi, M. (2007), "Intergenerational Persistence in Educational Attainment in Italy", mimeo, University of Milan.

Cramer, J. S. (2005), "Omitted Variables and Misspecified Disturbances in the Logit Model", Tinbergen Institute Discussion Paper 05-084/4, Tinbergen Institute, Amsterdam.

Currie, J. and Moretti, E. (2003), "Mother's Education and the Intergenerational Transmission of Human Capital: Evidence from College Openings", *Quarterly Journal of Economics*, 118: 1495-1532.

Duflo, E. (2001), "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment", *American Economic Review*, 91: 795-813.

Fernandez, R. and J.Gali. 1999. To each according to … ? Markets, tournaments and the matching problem with borrowing constraints. *Review of Economic Studies* 66: 799-824.

Francesconi, M. and Nicoletti, C. (2006), "Intergenerational Mobility and Sample Selection in Short Panels", *Journal of Applied Econometrics* 21: 1265-1293.

ISTAT (1995), *Sistema educativo e mercato del lavoro nel contesto internazionale*. Roma.

Machin, S. and Blanden, J. (2004), "Educational Inequality and the Expansion of UK Higher Education", *Scottish Journal of Political Economy* 51: 230-249.

Masia, A. and Santoro, I. (2006), *L'Università nella XII e XIII legislatura* (15/4/1994-29/5/2001), Universitas Quaderni 20, Associazione RUI

MIUR (2003), *Quarto rapporto sullo stato del sistema universitario*. Comitato nazionale per la valutazione del sistema universitario. Ministero dell'Istruzione, dell'Università e della Ricerca. Roma.

Roemer, J.E. (1998), *Equality of Opportunity*, Cambridge, MA: Harvard University Press.

Rostan, M. (2006), *Laureati italiani ed europei a confronto. Istruzione superiore e lavoro alle soglie di un periodo di riforme.* Milano: Edizioni Universitarie di Lettere Economia Diritto.

Shavit, Y., R. Arum, and A. Gamoran with G. Menahem, (eds.) 2007. *Stratification in Higher Education: A Comparative Study.* Palo Alto: Stanford University Press.

Figure 1. Expansion of university supply: *total* number of new *courses* introduced during 1990-2000 by region

Quintiles
89 - 141
63 - 89
37 - 63
15 - 37
4 - 15
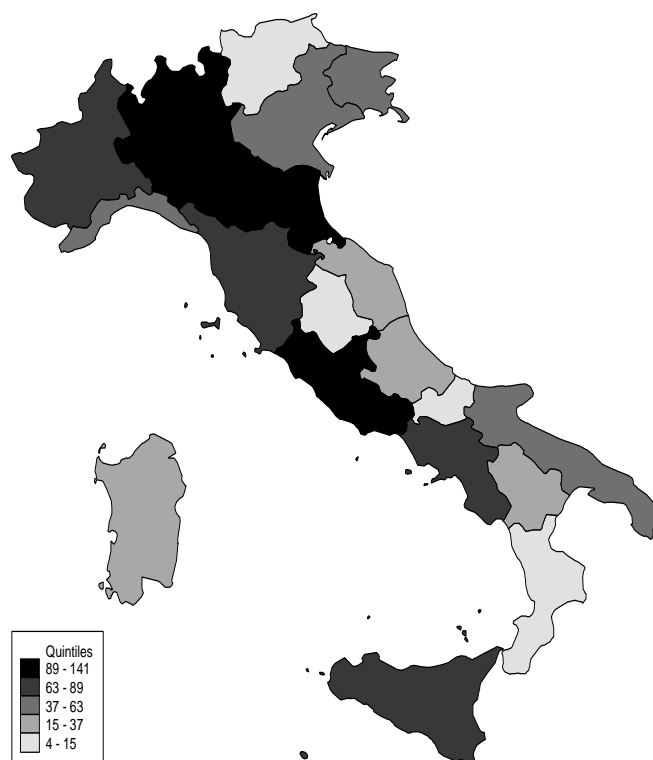
Table 1
Evolution of the Higher education supply in Italy

	1985	1990	1995	2000
Universities	55	58	60	70
Cities with a University head office	42	42	45	50
Cities with a University site	47	62	93	146
Schools (*facoltà*)	329	365	412	474
4-6 year degrees	778	898	988	1321
2-3 year degrees	-	-	388	956

Source: CNSVU, *La localizzazione geografica degli atenei statali e non statali in Italia dal 1980 al 2000*, 2001

Table 2
Effect of increase in the number of university courses and the number of university locations on the probability of holding a university degree

	(1)	(2)	(3)	(4)	(5)
a. Treatment: *new courses* per year					
By social class:					
working class or out of lab.force	0.202	0.174	0.047	0.202	0.010
	[0.183]	[0.180]	[0.170]	[0.183]	[0.177]
petite bourgeoisie	0.401	0.369	0.248	0.401	0.220
	[0.159]**	[0.143]**	[0.163]	[0.159]**	[0.149]
bourgeoisie	0.124	0.087	-0.018	0.124	-0.600
	[0.199]	[0.200]	[0.182]	[0.199]	[0.194]
R-squared	0.14	0.14	0.14	0.14	0.14
By cultural capital:					
low	0.361	0.331	0.205	0.361	0.185
	[0.159]**	[0.151]**	[0.150]	[0.159]**	[0.156]
medium	0.258	0.229	0.087	0.258	0.073
	[0.198]	[0.194]	[0.175]	[0.198]	[0.179]
high	-0.418	-0.437	-0.605	-0.417	-0.581
	[0.403]	[0.400]	[0.392]	[0.403]	[0.408]
R-squared	0.14	0.14	0.15	0.14	0.15
b. Treatment: *new sites* per year					
By social class:					
working class or out of lab.force	-0.922	-0.830	-1.175	-0.922	-0.525
	[1.247]	[1.222]	[1.274]	[1.247]	[1.335]
petite bourgeoisie	1.584	1.624	1.292	1.584	1.964
	[1.447]	[1.354]	[1.442]	[1.447]	[1.321]
bourgeoisie	-3.626	-3.679	-3.965	-3.625	-3.356
	[2.181]	[2.160]	[2.200]*	[2.181]	[2.115]
R-squared	0.14	0.14	0.15	0.14	0.15
By cultural capital:					
low	0.858	0.905	0.605	0.858	1.197
	[1.552]	[1.479]	[1.607]	[1.552]	[1.600]
medium	-0.993	-0.980	-1.323	-0.993	-0.660
	[1.432]	[1.422]	[1.315]	[1.432]	[1.218]
high	-4.903	-4.737	-5.352	-4.903	-4.222
	[4.001]	[4.021]	[4.067]	[4.001]	[4.051]
R-squared	0.14	0.14	0.15	0.14	0.15
Control variables:					
Δ Unemployment rate (1990-2000)	No	Yes	No	No	Yes
Growth rate per capita real disposable income (1990-2000)	No	No	Yes	No	Yes
Δ High school graduates (1990-2000)	No	No	No	Yes	Yes
N. observations	4 667	4 667	4 667	4 667	4 667

Notes. The treatments are the average yearly increase in the number of courses and the average yearly increase in the number of university sites in the period 1990-2000 at regional level divided by the population aged 19 in 1991. Robust z statistics in brackets (standard errors are clustered at region × cohort level); * significant at 10%; ** significant at 5%; *** significant at 1%. Models include cohort of birth dummies, age, region of residence dummies and gender. Observations are weighted to population proportions.

Table 3
Effect of increase in the number of university courses and the number of university locations on the probability of holding a university degree or being a full-time university student

	(1)	(2)	(3)	(4)	(5)
a. Treatment: *new courses* per year					
By social class:					
working class or out of lab.force	0.450	0.401	0.285	0.450	0.298
	[0.258]*	[0.246]	[0.232]	[0.258]*	[0.243]
petite bourgeoisie	0.662	0.607	0.500	0.663	0.513
	[0.190]***	[0.165]***	[0.197]**	[0.190]***	[0.172]***
bourgeoisie	0.272	0.207	0.121	0.272	0.114
	[0.217]	[0.206]	[0.216]	[0.217]	[0.209]
R-squared	0.25	0.25	0.25	0.25	0.25
By cultural capital:					
low	0.462	0.406	0.311	0.462	0.312
	[0.182]**	[0.161]**	[0.175]*	[0.182]**	[0.160]*
medium	0.536	0.478	0.369	0.536	0.379
	[0.178]***	[0.162]***	[0.178]**	[0.178]***	[0.166]**
high	0.840	0.801	0.657	0.840	0.711
	[0.427]*	[0.411]*	[0.427]	[0.427]*	[0.435]
R-squared	0.25	0.25	0.25	0.25	0.25
b. Treatment: *new sites* per year					
By social class:					
working class or out of lab.force	-0.691	-0.531	-1.003	-0.691	-0.264
	[1.653]	[1.628]	[1.605]	[1.653]	[1.647]
petite bourgeoisie	1.566	1.635	1.206	1.566	1.933
	[1.997]	[1.844]	[1.970]	[1.997]	[1.862]
bourgeoisie	-3.613	-3.707	-4.032	-3.614	-3.424
	[2.926]	[2.864]	[2.934]	[2.926]	[2.960]
R-squared	0.25	0.25	0.25	0.25	0.25
By cultural capital:					
low	0.302	0.390	-0.001	0.302	0.658
	[1.666]	[1.538]	[1.659]	[1.666]	[1.626]
medium	-1.240	-1.215	-1.636	-1.240	-0.923
	[1.864]	[1.758]	[1.802]	[1.864]	[1.707]
high	3.737	4.049	3.198	3.737	4.520
	[4.586]	[4.593]	[4.601]	[4.586]	[4.645]
R-squared	0.25	0.25	0.25	0.25	0.25
Control variables:					
∆ Unemployment rate (1990-2000)	No	Yes	No	No	Yes
Growth rate per capita real disposable income (1990-2000)	No	No	Yes	No	Yes
∆ High school graduates (1990-2000)	No	No	No	Yes	Yes
N. observations	4 667	4 667	4 667	4 667	4 667

Notes. The treatments are the average yearly increase in the number of courses and the average yearly increase in the number of university locations in the period 1990-2000 at regional level divided by the population aged 19 in 1991. Robust z statistics in brackets (standard errors are clustered at region × cohort level); * significant at 10%; ** significant at 5%; *** significant at 1%. Models include cohort of birth dummies, age, region of residence dummies and gender. Observations are weighted to population proportions.

Table 4
Robustness checks

	(1) only stayers	(2) ages 35-43
a. Treatment: *new courses* per year		
By social class (ages 23-31):		
working class or out of lab.force	0.301	0.446
	[0.272]	[0.235]*
petite bourgeoisie	0.469	0.674
	[0.160]***	[0.156]***
bourgeoisie	0.081	0.349
	[0.219]	[0.213]
By social class (ages 35-43):		
working class or out of lab.force	-	-0.155
		[0.114]
petite bourgeoisie	-	-0.117
		[0.095]
bourgeoisie	-	-0.815
		[0.248]***
R-squared	0.25	0.25
By cultural capital (ages 23-31):		
low	0.291	0.546
	[0.165]*	[0.147]***
medium	0.355	0.532
	[0.182]*	[0.198]**
high	0.528	0.857
	[0.495]	[0.428]*
By cultural capital (ages 35-43):		
low	-	-0.300
		[0.092]***
medium	-	0.244
		[0.270]
high	-	-0.954
		[0.492]*
R-squared	0.25	0.25
Control variables:		
Δ Unemployment rate (1990-2000)	Yes	Yes
Growth rate per capita real disposable income (1990-2000)	Yes	Yes
Δ High school graduates (1990-2000)	Yes	Yes
N. observations	4 120	9 239

Notes. The treatment is the average yearly increase in the number of courses in the period 1990-2000 at regional level divided by the population aged 19 in 1991. Robust z statistics in brackets (standard errors are clustered at region × cohort level); * significant at 10%; ** significant at 5%; *** significant at 1%. Models include cohort of birth dummies, age, region of residence dummies and gender. Observations are weighted to population proportions.

Appendix. A snapshot of the University regulation in Italy

The Italian university system has traditionally been organised by central approval. Even the oldest universities (Turin, Pavia, Genoa, Cagliari and Sassari) were admitted by *royal decree in 1859*, or were approved by pre-unitary states (Pisa, Siena, Bologna, Parma, Modena and Macerata) and then incorporated in the dawning Italian state. This was reaffirmed by the Fascist regime in 1933 with a unified framework law (*Testo unico, regio decreto n.1952 31/8/1933*) that classified state (fully financed) and free (partially subsidised) universities. Given the stationary number of enrolments, the list of state universities remained substantially unaltered until the reform of 1969, when university admission was opened to all students who has completed five years of secondary education (before that, graduates from technical or professional high school did not fully gain the right to enrol in higher education: they could only enrol in university courses related to their high-school field – for instance, high-school diplomats in accounting could only enrol in economics) .

The rising pressure of applicants pushed the Italian universities towards a mass university system, which in turn forced the legislator to approve the opening of new universities. This includes: Udine in 1978; 2nd university of Rome, Viterbo and Cassino in 1979; Potenza in 1981; l'Aquila, Chieti-Pescara, Brescia, Campobasso, Reggio Calabria, Verona and Trento in 1982 (transformation of pre-existing higher education institutions).

A substantial reform of the functioning of the universities (in terms of management, hiring, teaching loads) came in 1980 (*law n.382 11/7/1980*), which commanded that any variation in the existing university supply should be included in a development plan (*piani triennali*), to be approved by the Minister of Education every three years (*law n.590 14/8/1982*). However any opening of new universities required a specific law approved in the Parliament.

It was a decade later that the requirement of parliamentary approval was abandoned (*law n.341 19/12/1990*), while the inclusion in a development plan was still retained. However universities gained autonomy in advancing proposals of new initiatives to the Ministry. Up to that point, a university professor was appointed to a chair corresponding to a specific course, and in order to introduce a specific degree a university had to fulfil the requirement of a specific law listing the number and names of courses held necessary to attain the degree. This is the rational for the legal value of a degree across the country: since the teaching was in principle identical across the country, there was no reason to presume that identical degrees obtained in different universities could be different, given a centrally organised hiring procedure through a national competition. Thus, in order to offer a new degree (to be selected in a closed list of admissible degrees) a university needed an almost complete faculty corresponding to the courses to be taught in the specific degree.

Since 1990 the system was made more flexible. University professors were associated to research fields (*settori scientifico-disciplinari*) and not to teachings, thus relaxing the resource constraint. University were entitled to propose new degrees, which however still needed a formal approval of the central government. A further degree of flexibility was the possibility, also introduced in 1990 but practically implemented only in 1995, to create shorter courses, 2-3 year long, called *diplomi universitari*. This was in anticipation of the fully-fledged reform in accordance with the "Bologna process", introduced in 1999 and commonly known as "3+2" reform, since it reorganised the teaching as a 3-year bachelor degree followed by a 2-year master-equivalent degree (*law n.509 3/11/1999*). This law become to be applied after 2001.

The central government retained its initiative, by forcing larger universities (those exceeding 40 thousands students enrolled) to split into two. The provision was contained in the fiscal law for 1997 (*law n.662 23/12/1996*) and allowed the creation of the 3rd university of Rome, Teramo, Catanzaro, Benevento, 2nd university of Milan, Insubria at Varese, Piemonte Orientale in Vercelli, and Foggia.

The development plans approved for 1991-93 and 1994-96 allowed (and financed) the expansion of the higher education supply, in order to cover the entire national territory and to re-equilibrate funds allocation with respect to Southern regions (on the alleged aim to increase the equality of opportunities in accessing higher education).

With the aim of moving towards a more decentralized system, during 90's the Italian Parliament approved a series of laws that allowed Italian universities with a substantial, previously inexperienced, autonomy. A path breaking law (*law n. 168 12/5/1989*) reformed the centralized organization creating a Ministry for University and Scientific and Technological Research (*Ministero per l'Università e la Ricerca Scientifica e Tecnologica*, MURST), as a separate body from the Ministry of Public Education. This law established the general principles for self-government, as it gave the rights for the universities to give themselves statutes. As a consequence, universities gained both teaching and financial autonomy. By autonomy it was meant the freedom to allocate the funding from the central government, which remained the prevailing source of funds. Some autonomy in setting student fees was granted with the fiscal law approved in 1993 (*Law n. 537 24/12/1993*), in correspondence with a reduction of funding from the government. Universities were allowed to manage their teaching and research activities, but creation of new courses was still submitted to central approval. In addition, professors' salaries and new hiring were still covered by the central government. This produced a "soft budget constraint" setting, as the bulk of the financing needs remained covered by the central government (from the universities' point of view, expanding the supply of courses was also a way to gain additional voice on the government to request new professors). The process of progressive devolution achieved its completion in 1998, when universities were allowed to open (or close) new schools (*facoltà*) and/or courses without central approval, conditional on self-financing of the initiative (*DPR n.25 27/1/1998*, issued in application of a general trend to devolution required by *law n.59 15/3/1997*, also known as *legge Bassanini*). While an overall evaluation of this decade has still to be written, it is well summarised by the words of a former deputy minister of Higher Education in the period 1996-2001: "If necessary, the final assessment is that universities and research institutes obtained their autonomy in an uncertain framework, which was incomplete from a legislative view-point, and was managed in a contradictory way" (L.Guerzoni in the introduction to Masia e Santoro 2006, p.16).